



Sequence Listing

<110> Lin, Ching-Yu

Lin, Ruey-Wen

You, Chiou-Mien

Huang, Hsing-Hsuan

Lee, Bor-Heng

Lee, Hsien-Hsiung

Lin, Yu-Ju

Fan, Chih-Chun

Hsu, Han-Chuan

Shih, Chia-Wen

Yeh, Chih-Hsing

Kao, Yi-Feng

Pan , Chih-Long

Chan, Peter

<120> METHOD AND DETECTOR FOR IDENTIFYING SUBTYPES OF HUMAN PAPILLOMA VIRUSES

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ctatgcagat cttaca 16

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ctgcaactac taatc 15

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actactaatc cagttccatc ta 22

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ctaattccagt tccatctata 20

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ctatatatga accttctaaa 20

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tgcaacaaca ttactccag 20

<210> 402

<211> 22

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gctgctacac aggctaatga 20

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<400> 411

tgctacacag gctaatgaat 20

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atgaatacac agcctctaac 20

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caaaatacat cttaccctg aaa 23

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tgaacattta ttggatgag 19

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<400> 419

ttatgatggc cttgta 16

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<400> 420

tgctaccaac accga 15

<210> 421

<211> 20

<212> DNA

<213> Human Papilloma Virus

<400> 421

ctaccaacac cgaatcagaa 20

<210> 422

<211> 22

<212> DNA

<213> Human Papilloma Virus

<400> 422

ccaacaccga atcagaatat aa 22

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<212> DNA

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<210> 425

<211> 19

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tgactcctta ttagatgag 19

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tgttgtgccc cctccctcca caagtt 26

<210> 427

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ctataggtac ttgcagtctc gc 22

<210> 428

<211> 22

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<213> Human Papilloma Virus

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ggggggccgcc gccgccaagc ct 22

<210> 429

<211> 16

<212> DNA

<213> Human Papilloma Virus

<400> 429

ttatgctggc atgtcc 16

<210> 430

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 6 (6743-7151/409 bp)

<400> 430

tatttggttg	ggtaatcaac	tgtttggttac	tgtggtagat	accacacgca	gtaccaacat	60
gacattatgt	gcatccgtaa	ctacatcttc	cacatacacc	aattctgatt	ataaagagta	120
catgcgtcat	gtggaagagt	atgatttaca	atttattttt	caattatgta	gcattacatt	180
gtctgctgaa	gtaatggcct	atattcacac	aatgaatccc	tctgtttttg	aagactggaa	240
ctttgggtta	tcgcctcccc	caaatggtac	attagaagat	acctataggt	atgtgcagtc	300
acaggccatt	acctgtcaaa	agcccactcc	tgaaaaggaa	aagccagatc	cctataagaa	360
ccttagtttt	tgggaggtta	atttaaaaga	aaagttttct	agtgaattg		409

<210> 431

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 11 (6727-7135/409 bp)

<400> 431

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tatttgctgg ggaaaccact tgtttggttac tgtggtagat accacacgca gtacaaatat    60
gacactatgt gcatctgtgt ctaaatctgc tacatacact aattcagatt ataaggaata    120
catgcgccat gtggaggagt ttgatttaca gtttattttt caattgtgta gcattacatt    180
atctgcagaa gtcatggcct atatacacac aatgaatcct tctgttttgg aggactggaa    240
ctttgggttta tcgcctccac caaatgggtac actggaggat acttatagat atgtacagtc    300
acaggccatt acctgtcaga aacccacacc tgaaaaagaa aaacaggatc cctataagga    360
tatgagtttt tgggagggtta acttaaaaga aaagttttca agtgaatta                409
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<210> 432

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 16 (6602-7013/412 bp)

<400> 432

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catttgttgg ggtaaccaac tatttggttac tgttgttgat actacacgca gtacaaatat    60
gtcattatgt gctgccatat ctacttcaga aactacatat aaaaatacta actttaagga    120
gtacctacga catggggagg aatatgattt acagtttatt tttcaactgt gcaaaataac    180
cttaactgca gacgttatga catacataca ttctatgaat tccactatth tggaggactg    240
gaattttggt ctacaacctc cccaggaggg cactactagaa gatacttata ggtttgtaac    300
ccaggcaatt gcttgtcaaa aacatacacc tccagcacct aaagaagatg atccccctaa    360
aaaatacact ttttgggaag taaatttaaa ggaaaagttt tctgcagacc ta                412
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<210> 433

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 18 (6587-6992/415 bp)

<400> 433

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tgtttgctgg cataatcaat tatttggttac tgtggtagat accactccca gtaccaatth    60
aacaatatgt gcttctacac agtctcctgt acctgggcaa tatgatgcta ccaaatttaa    120
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gcagtatagc agacatgttg aggaatatga tttgcagttt atttttcagt tgtgtactat	180
tacttttaact gcagatgtta tgtcctatat tcatagtatg aatagcagta ttttagagga	240
ttggaacttt ggtgttcccc ccccccaac tactagtttg gtggatacat atcgttttgt	300
acaatctggt gctattacct gtcaaaagga tgctgcaccg gctgaaaata aggatcccta	360
tgataagtta aagttttgga atgtggattt aaaggaaaag ttttcttttag actta	415

<210> 434

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 26 (6553-6967/415 bp)

<400> 434

tatctgttgg ggcaatcaat tgtttgttac ctgtgttgat accacccgca gtactaacct	60
taccattagt acattatctg cagcatctgc atccactcca tttaaaccat ctgattataa	120
acaatttata agacatggcg aagaatatga attacaattt atatttcagt tgtgtaaaat	180
aacacttaca acagatgtta tggcttacat acatttaatg aatgcctcca tattggagga	240
ttggaatttt ggactaacct tacctccac tgctagtttg gaagatgcct ataggtttat	300
taaaaactct gctactacct gtcagcgtaa cgccctcct gtgccaaagg aagatccttt	360
tcaaaaattt aaattttggg atgtagattt aaaagaaaaa ttttctattg atttg	415

<210> 435

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 31 (6520-6931/412 bp)

<400> 435

tatttggttg ggcaatcagt tatttggttac tgtggtagat accacacgta gtaccaatat	60
gtctgtttgt gctgcaattg caaacagtga tactacattt aaaagtagta attttaaaga	120
gtatttaaga catggtgagg aatttgattt acaatttata tttcagttat gcaaaataac	180
attatctgca gacataatga catatattca cagtatgaat cctgctattt tggaagattg	240
gaattttgga ttgaccacac ctccctcagg ttctttggag gataacctata ggtttgtcac	300
ctcacaggcc attacatgtc aaaaaactgc cccccaaaag cccaaggaag atccatttaa	360
agattatgta ttttgggagg ttaatttaaa agaaaagttt tctgcagatt ta	412

<210> 436

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 32 (6837-7245/409 bp)

<400> 436

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tatatgttgg ggtaatcaag tgtttctaac tgttgtggat actaccgta gtactaacat    60
gactgtgtgt gctactgtaa caactgaaga cacatacaag tctactaact ttaaggaata    120
tctacgccat gcagaggaat atgatataca gtttatatth caattgtgca aaattacatt    180
atctgtagag gttatgtcat atatccacac catgaatcct gacatactag acgattggaa    240
tggtggtgta gctccaccgc cctctggtac tttagaagat agttatagat ttgtgcagtc    300
tcaggccata cgatgtcaag ctaaggtaac agcacctgaa aaaaaggatc ctttttctga    360
ctattcattt tgggaagtaa atttatctga aaagttttct agtgattta                409
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<210> 437

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 33 (6559-6967/409 bp)

<400> 437

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tatttggttg ggcaatcagg tatttggttac tgtggtagat accactcgca gtactaatat    60
gactttatgc acacaagtaa ctagtgacag tacatataaa aatgaaaatt ttaaagaata    120
tataagacat gttgaagaat atgatctaca gtttgthttt caactatgca aagttacctt    180
aactgcagaa gttatgacat atattcatgc tatgaatcca gatatttttag aagattggca    240
atthggttta acacctctc catctgctag ttacaggat acctataggt ttgttacctc    300
tcaggctatt acgtgtcaaa aaacagtacc tccaaaggaa aaggaagacc ccttaggtaa    360
atatacattt tgggaagtgg atttaaagga aaaattttca gcagattta                409
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<210> 438

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 35 (6542-6953/412 bp)

<400> 438

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tattttgttg agtaaccaat tgtttggttac tgtagttgat acaaccgta gtacaaatat    60
gtctgtgtgt tctgctgtgt cttctagtga cagtacatat aaaaatgaca attttaagga    120
atattttaagg catggtgaag aatatgattt acagtttatt tttcagttat gtaaaataac    180
actaacagca gatggttatga catatatattca tagtatgaac ccgtccattt tagaggattg    240
gaattttggc cttacaccac cgccttcttg taccttagag gacacatatt gctatgtaac    300
atcacaggct gtaacttgtc aaaaaccag tgcacaaaaa cctaaagatg atccattaaa    360
aaattatact ttttgggagg ttgatttaaa ggaaaagttt tctgcagact ta            412
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<210> 439

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 37 (6711-7125/415 bp)

<400> 439

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cattttatgg ggtaatcaaa tgtttatcac agttgctgat aatacacgga acacaaactt    60
ttctattagt gtgtctactg acaatggcga agttacagaa tataattctc aaacactcag    120
agaataccta agacatgttg aagaatacca gctttcaatt attttacaac tttgtaaagt    180
tcctttaaag gctgagggtt taactcagat aaatgcaatg aattctggta tattggaaga    240
gtggcaatta ggatttgtag ctactccaga taattcagta catgaccttt ataggtagat    300
taattcaaag gctaccaagt gtcctgatgc agttgttgaa aaagaaaagg aagatccctt    360
tgcaaaaatat acattttgga atgtagattt aactgaaaaa ttatcattgg attta        415
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<210> 440

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 39 (6605-7017/415 bp)

<400> 440

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tatatgttgg cataatcaat tatttcttac tgttgtggac actaccgta gtaccaactt    60
tacattatct acctctatag agtcttccat accttctaca tatgatcctt ctaagtttaa    120
ggaatatacc aggcacgtgg aggagtatga ttacaaattt atatttcaac tgtgtactgt    180
cacattaaca actgatgtta tgccttatat tcacactatg aattcctcta tattggacaa    240
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ttggaatttt gctgtagctc ctccaccatc tgccagtttg gtagacactt acagatacct	300
acagtctgca gccattacat gtcaaaagga tgctccagca cctgaaaaga aagatccata	360
tgacggtcta aagttttgga atgttgactt aagggaagaaag tttagtttgg aactt	415

<210> 441

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 42 (6802-7210/409 bp)

<400> 441

tatatgttgg ggaaatcagc tatttttaac tgtggttgat actaccgta gtactaacat	60
gactttgtgt gccactgcaa catctggtga tacatatata gctgctaatt ttaaggaata	120
tttaagacat gctgaagaat atgatgtgca atttatattt caattgtgta aaataacatt	180
aactgttgaa gttatgtcat atatacacia tatgaatcct aacatattag aggagtggaa	240
tgttggtgtt gcaccaccac cttcaggaac tttagaagat agttataggt atgtacaatc	300
agaagctatt cgctgtcagg ctaaggtaac aacgccagaa aaaaaggatc cttattcaga	360
cttttggttt tgggaggtaa atttatctga aaagttttct actgattta	409

<210> 442

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 43 (21-435/415 bp)

<400> 442

catttgtttt gggaatcagt tgtttgttac agtggttagat accactcgta gtacaaactt	60
gacgttatgt gcctctactg accctactgt gcccagtaca tatgacaatg caaagtttaa	120
ggaatacttg cggcatgtgg aagaatatga tctgcagttt atatttcaat tatgcataat	180
aacgctaaac ccagaggtta tgacatatat tcatactatg gatcccatat tattagagga	240
ctggaatttt ggtgtgtccc cacctgcctc tgcttctttg gaagatactt atcgcttttt	300
gtctaacaag gccattgcat gtcaaaaaaa tgctcccca aaggaacggg aggatcccta	360
taaaaagtat acattttggg atataaatct tacagaaaag ttttctgcac aactt	415

<210> 443

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 44 (6647-7061/415 bp)

<400> 443

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tattttgttgg ggaaatcagt tattttgttac tgttgtagat actaccgta gtacaaacat    60
gacaatatgt gctgccacta cacagtcctcc tccgtctaca tatactagtg aacaatataa    120
gcaatacatg cgacatgttg aggagtttga cttacaatth atgtttcaat tatgtagtat    180
taccttaacg gcggaggtaa tggcctatct tcatactatg aatgctggta ttttagaaca    240
gtggaacttt gggttgtcgc cgcccccaaa tggtaacctta gaggacaaat acagatatgt    300
gcagtcccag gccattacat gtcaaaaagcc accccctgaa aaggcaaagc aggaccctta    360
tgcaaaatta agtttttggg aggtggatct tagagaaaag ttttctagtg agttg      415
```

<210> 444

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 45 (6582-6996/415 bp)

<400> 444

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tattttgttgg cataatcagt tgtttgttac tgtagtggac actaccgca gtactaatth    60
aacattatgt gcctctacac aaaatcctgt gccaaagtaca tatgacccta ctaagtttaa    120
gcagtatagt agacatgttg aggaatatga tttacagttt atttttcagt tgtgcactat    180
tactttaact gcagaggtta tgtcatatat ccatagtatg aatagtagta tattagaaaa    240
ttggaattht ggtgtccctc caccacctac tacaagtttg gtggatacat atcgttttgt    300
gcaatcagtt gctgttacct gtcaaaaagga tactacacct ccagaaaagc aggatccata    360
tgataaatta aagttttgga ctgttgacct aaaggaaaaa ttttcctccg atttg      415
```

<210> 445

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 51 (6486-6897/412 bp)

<400> 445

catttgctgg aacaatcagc tttttattac ctgtgttgat actaccagaa gtacaaattt	60
aactattagc actgccactg ctgcggtttc cccaacattt actccaagta actttaagca	120
atatattagg catggggaag agtatgaatt gcaatttatt tttcaattat gtaaaattac	180
tttaactaca gaggtaatgg cttatttaca cacaatggat cctaccattc ttgaacagtg	240
gaattttgga ttaacattac ctccgtctgc tagtttgag gatgcatata ggtttgtag	300
aatgcagct actagctgtc aaaaggacac ccctccacag gctaagccag atcctttggc	360
caaatataaa ttttgggatg ttgatttaaa ggaacgattt tctttagatt ta	412

<210> 446

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 52 (6623-7031/409 bp)

<400> 446

catatgttgg ggcaatcagt tgtttgtcac agttgtggat accactcgta gcactaacat	60
gactttatgt gctgagggtta aaaaggaaaag cacatataaa aatgaaaatt ttaaggaata	120
ccttcgtcat ggcgaggaat ttgatttaca atttattttt caattgtgca aaattacatt	180
aacagctgat gttatgacat acattcataa gatggatgcc actatttttag aggactggca	240
atttggcctt accccaccac cgtctgcac tttggaggac acatacagat ttgtcacttc	300
tactgctata acttgtcaaa aaaacacacc acctaaagga aaggaagatc ctttaaagga	360
ctatatgttt tgggaggttg atttaaaaga aaagttttct gcagattta	409

<210> 447

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 53 (6614-7022/409 bp)

<400> 447

catctgttgg aacaatcagt tatttgtaac tgttgtggat accaccagga atacaaacat	60
gactctttcc gcaaccacac agtctatgtc tacatataat tcaaagcaaa ttaaacagta	120
tgtagacat gcagaggaat atgaattaca atttgtgttt caactatgta aaatatccct	180
gtctgctgag gttatggcct atttacatac tatgaattct accttactgg aagactggaa	240
tataggtttg tcgcctcctg ttgccactag ctagaggac aaatacagat atgtgaaaag	300
tgagctata acctgtcaaa aggatcagcc ccctcctgaa aagcaggacc cactatctaa	360

atataaaattt tgggaggtca atttgcaaaa cagtttttct gctgatttg

409

<210> 448

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 54 (6561-6972/412 bp)

<400> 448

tatttggttg	ggcaatcagg	tgtttttaac	agttgtagat	accacccgta	gtactaacct	60
aacatttgt	gctacagcat	ccacgcagga	tagctttaat	aattctgact	ttagggagta	120
tattagacat	gtggaggaat	atgatttaca	gtttatat	cagttatgta	ccataaccct	180
tacagcagat	gttatggcct	atattcatgg	aatgaatccc	actattctag	aggactggaa	240
ctttggtata	acccccccag	ctacaagtag	tttggaggac	acatataggt	ttgtacagtc	300
acaggccatt	gcatgtcaaa	agaataatgc	ccctgcaaag	gaaaaggagg	atccttacag	360
taaattta	ttttggactg	ttgaccttaa	ggaacgattt	tcattctgacc	tt	412

<210> 449

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 55 (6647-7061/415 bp)

<400> 449

tatttggttg	gggaatcagt	tatttggttac	tgttgtagat	actacacgta	gtacaaacat	60
gacaatatgt	gctgctacaa	ctcagtctcc	atctacaaca	tataatagta	cagaatataa	120
acaatacatg	cgacatggtg	aggagtttga	cttacagttt	atgtttcaat	tatgtagtat	180
taccttaact	gctgaggtaa	tggcctat	acataccatg	aatcctggta	ttttggaaca	240
gtggaacttt	gggttgctgc	cacccccaaa	tggtacctta	gaagacaaat	acagatatgt	300
gcagtcacag	gccattacat	gtcaaaagcc	tccccctgaa	aaggcaaagc	aggaccccta	360
tgcaaaatta	agtttttggg	aggtagatct	cagagaaaag	ttttctagt	agtta	415

<210> 450

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 56 (6559-6967/409 bp).

<400> 450

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catttgctgg ggtaatcaat tatttggttac tgtagtagat actactagaa gtactaacat    60
gactattagt actgctacag aacagttaag taaatatgat gcacgaaaaa ttaatcagta    120
ccttagacat gtggaggaat atgaattaca atttggtttt caattatgca aaattacttt    180
gtctgcagag gttatggcat atttacataa tatgaatgct aacctactgg aggactggaa    240
tattgggtta tccccgccag tggccaccag cctagaagat aaatatagat atgttagaag    300
cacagctata acatgtcaac gggaacagcc accaacagaa aaacaggacc cattagctaa    360
atataaattt tgggatgtta acttacagga cagtttttct acagacctg                    419
```

<210> 451

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 58 (6608-7016/409 bp)

<400> 451

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catttgctgg ggcaatcagt tatttggttac cgtggttgat accactcgta gcactaatat    60
gacattatgc actgaagtaa ctaaggaagg tacatatataa aatgataatt ttaaggaata    120
tgtacgtcat gttgaagaat atgacttaca gtttggtttt cagctttgca aaattacact    180
aactgcagag ataatgacat atatacatat tatggattcc aatatttttg aggactggca    240
atttggttta acacctcctc cgtctgccag ttacaggac acatatagat ttgttacctc    300
ccaggctatt acttgccaaa aaacagcacc ccctaaagaa aaggaagatc cattaaataa    360
atatactttt tgggaggtta acttaaagga aaagttttct gcagatcta                    409
```

<210> 452

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 59 (6571-6985/415 bp)

<400> 452

```
tatatgttgg cacaatcaat tgtttttaac agttgtagat actactcgca gcaccaatct    60
ttctgtgtgt gcttctacta cttcttctat tcctaagtga tacacaccta ccagttttaa    120
```

agaatatgcc agacatgtgg aggaatttga tttgcagttt atatttcaac tgtgtaaaat	180
aacattaact acagaggtaa tgtcatacat tcataatatg aataccacta ttttggagga	240
ttggaatttt ggtgttacac cacctcctac tgctagttaa gttgacacat accgttttgt	300
tcaatctgct gctgtaactt gtcaaaagga caccgcaccg ccagttaaac aggaccctta	360
tgacaaaacta aagttttggc ctgtagatct taaggaaagg ttttctgcag atctt	415

<210> 453

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 61 (6732-7146/415 bp)

<400> 453

tatttgttgg tttaatgaat tgtttgtaac cgttgtggat accaccgca gtactaattt	60
aaccatttgt actgctacat cccccctgt atctgaatat aaagccacaa gcttttaggga	120
atatttgcgc catacagagg agtttgattt gcaatttatt tttcagttat gtaaaatata	180
tttaaccctt gaaattatgg cctacctaca taatatgaat aaggccttgt tggatgactg	240
gaacttttgt gtggtaccac caccctctac cagtttagaa gacacatata ggtttttgca	300
gtccagagct attacatgtc agaagggtgc tgctgccccg ccgccaagg aggatcgcta	360
tgccaagtta tccttttgga ctggtgattt acgagacaag ttttccactg atttg	415

<210> 454

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 62 (21-429/409 bp)

<400> 454

tatttgttgg tttaatgaac tgtttgttac tgtggtggat actaccagaa gtactaattt	60
tactatttgt accgcctcca ctgctgcagc agaatacacg gctaccaact ttagggaatt	120
tttgcgacac acggaggaat ttgatttgca atttatattt caattgtgca aaatacagtt	180
aacccccgaa attatggcct acctgcataa tatgaacaag gaccttttgg atgactggaa	240
ctttggggtt ttacctcccc cttccactag tttagatgag acatatcact atttcgagtc	300
tcgggctatt acatgtcaaa gggggctgcc taccggtccc aagggtggacc cgtatgcgca	360
aatgacattt tggactgtgg atcttaagga caagttgtct actgatttg	409

<210> 455

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 66 (6609-7017/409 bp)

<400> 455

```
catatgctgg ggtaatcagg tatttggttac tgttgtggat actaccagaa gcaccaacat    60
gactattaat gcagctaaaa gcacattaac taaatatgat gcccgtagaa tcaatcaata    120
ccttcgccat gtggaggaat atgaactaca gtttgtgttt caactttgta aaataacctt    180
aactgcagaa gttatggcat atttgcataa tatgaataat actttattag acgattggaa    240
tattggctta tccccaccag ttgcaactag cttagaggat aaatataggt atattaaaag    300
cacagctatt acatgtcaga gggaacagcc ccctgcagaa aagcaggatc ccctggctaa    360
atataagttt tgggaagtta atttacagga cagcttttct gcagacctg                409
```

<210> 456

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 67 (6584-6992/409 bp)

<400> 456

```
tatatgctgg ggtaatcaaa tatttggttac tgttgtagac actacacgta gtaccaacat    60
gactttatgt tctgaggaaa aatcagaggc tacatacaaa aatgaaaact ttaaggaata    120
ccttagacat gtggaagaat atgatttgca gtttatatth cagctgtgca aaatatccct    180
tactgcaaat gttatgcaat acatacacac catgaatcca gatatatag aggactggca    240
atttggcctt acaccacctc cttcaggtaa tttacaggac acatatagat ttgttacctc    300
gcaggctatt acctgtcaaa aaacatcccc tccaacagca aaggaagatc ctcttaaaaa    360
gtacagtttt tgggaaatca atttaaagga aaaattttct gcagattta                409
```

<210> 457

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 68 (2582-2996/415 bp)

<400> 457

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tatttggttg cataatcaat tatttcttac tgttggtgat accactcgca gtaccaattt 60
tactttgtct actactactg aatcagctgt accaaatatt tatgacccta ataaatttaa 120
ggaatatatt aggcattgtg aggaatatga tttgcaatth atatttcagt tgtgtactat 180
aacattgtcc actgatgtaa tgtcctatat acatactatg aatcctgcta ttttggtatga 240
ttggaattht ggtgttgccc ctccaccatc tgctagtctt gtagatacat accgctatct 300
gcaatcagca gcaattacat gtcaaaaaga cgccctgca cctactaaaa aggatccata 360
tgatggctta aacttttgga atgtaaatth aaaggaaaag tttagtcttg aactg 415
```

<210> 458

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 69 (6509-6923/415 bp)

<400> 458

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catttggttg ggcaaccaat tgtttgttac ttgtgtgat actaccgca gtaccaacct 60
cactattagt actgtatctg cacaatctgc atctgccact tttaaaccat cagattataa 120
gcagtttata aggcattgtg aggaatatga attacagtht atatttcaat tgtgtaaaaat 180
tactcttacc actgatgtaa tggcctatat ccatacaatg aattctacta ttttggaataa 240
ttggaattht ggccttacct tgccctctac tgctagttht gaagatgcat ataggthtat 300
taaaaattca gctactacat gtcaacgca tgccctgca cagcccaagg aggatccatt 360
tagtaaatth aaattttggg acgttgatct taaagaaaag ttttctattg attta 415
```

<210> 459

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 70 (6549-6963/415 bp)

<400> 459

```
catttggttg cataaccagt tgtttattac tgtgggtggac actacacgta gtactaatth 60
tacattgtct gcctgcaccg aaacggccat acctgctgta tatagcccta caaagthtaa 120
ggaatatact aggcattgtg aggaatatga tttacaatth atatttcaat tgtgtactat 180
cacattaact gctgacgtht tggcctacat ccatactatg aatcctgcaa ttttggaataa 240
```

ttggaatata ggagttaccc ctccaccatc tgcaagcttg gtggacacgt ataggtat	300
acaatcagca gctatagcat gtcaaaagga tgctcctaca cctgaaaaaa aggatcccta	360
tgacgattta aaattttgga atgttgattt aaaggaaaag tttagtagag aacta	415

<210> 460

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 72 (6758-7172/415 bp)

<400> 460

catctgttgg tttaatgagc tttttgtgac agttgtagat actactcgca gtactaatgt	60
aactat	120
gtatcttcgc cacactgagg aatttgattt gcagtttata tttcaactgt gtaaaattca	180
cttaactcct gaaattatgg cctacttgca caatatgaat aaggccttat tggatgactg	240
gaattttggg gtgggtgctc ctccctctac cagtttggat gataacctata ggtttttgca	300
gtctcg	360
tgctaactta tccttttggg ctgtggattt aaaggacaaa ttttccactg acttg	415

<210> 461

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 74 (1613-2027/415 bp)

<400> 461

tatttg	60
gactgtgtgt gctcctacct cacaatcgcc ttctgctaca tataatagtt cagactacaa	120
acaatacatg cgacatgtgg aggaatttga tttgcaattt atttttcaat tatgtagtat	180
taagttaact gctgagggtta tggcctatat tcatactatg aatcctacag ttttagaaga	240
gtggaacttt gggctaacgc ctccccccaa tggtagttta gaagacacct acagatatgt	300
gcagtc	360
tgcaaat	415

<210> 462

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 82 (6536-6950/415 bp)

<400> 462

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catttgctgg aataatcagc tttttattac ttgtgttgac actactaaaa gtaccaattt    60
aaccattagc actgctgtta ctccatctgt tgcacaaaca tttactccag caaactttaa    120
gcagtacatt aggcatgggg aagaatatga attgcaattt atatttcaat tgtgtaaaat    180
cactttaact actgaaatta tggettacct gcacaccatg gattctacaa ttttagaaca    240
gtggaathtt ggattaacat tgccccctc cgctagtgtt gaggatgcct atcgatttgt    300
aaaaaatgca gcaacatcct gtcacaagga cagtcctcca caggctaaag aagacccttt    360
ggcaaatat aaattttgga atgtagacct taaggaacgc ttttctttgg atttg      415
```

<210> 463

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype CP8061 (21-432/412 bp)

<400> 463

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catttgttgg ggcaatcagc tttttgtaac agttgtggac acatcacgta gtacaaatat    60
gtccatctgt gctacaaaaa ctgttgagtc tacatataaa gcctctagtt tcatggaata    120
tttgagacat ggagaagaat ttgatttgca atttatattt caactatgtg ttattaattt    180
aacagctgaa attatggcct acttacatcg catggatgct acattactgg aggactggaa    240
tttttggttc ttaccacctc ctactgctag tcttggtgat acctaccgct ttttacagtc    300
tcaggccata acctgtcaga aaaacagtc tctcctgca gaaaaaaagg acccctatgc    360
agatcttaca ttttgggagg tggatttaaa ggagcggttt tcactagaat tg      412
```

<210> 464

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype CP8304 (21-432/412 bp)

<400> 464

tattttgttg tttaatgaaa tgtttggttac agtgggtggat actaccagaa gcaccaatTT 60
tactatttgc acagctacat ctgctgctgc agaatacaag gcctctaact ttaaggaatt 120
tctgcgccat acagaggaat atgatttgca gtttattttc caattatgta aaatacagtt 180
aacaccagaa attatggcct acttacataa tatgaacaag gcactggttg atgattggaa 240
ttttggtgtg ttgccacctc cttccaccag tttagatgac acatatcgct ttttacagtc 300
tcgggccatt acctgtcaaa aggggtgctgc tgcccctgcg cccaaagagg acccttatgc 360
cgacatgtca ttttggacag ttgaccttaa ggacaagttg tctactgatt tg 412

<210> 465

<211> 350

<212> DNA

<213> Human Papilloma Virus subtype L1AE5 (11-360/350 bp)

<400> 465

ggcacaacca attatttata actgtggttag acacaacacg tagtaccaat cttaccttat 60
ctactgcaac tactaatcca gttccatcta tatatgaacc ttctaaatTT aaggaataca 120
cacgccatgt agaggaatat gatttacaat ttatatTTca attgtgtaaa attacactta 180
ctactgatgt tatgtcttat atacataaca tggatcctac tatttttagat agttggaatt 240
ttggtggttag tcctcccca tctgctagct tagtagatac atataggTTt ttacagtcatt 300
ctgccattac atgtcagaag gatgtggTTg ttccacaaaa aaaggatcca 350

<210> 466

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype MM4 (21-435/415 bp)

<400> 466

catttgctgg aataatcagc tttttattac ttgtgttgac actactagaa gtaccaatTT 60
aaccattagc actgctgtta ctcaatctgt tgcacaaaca tttactccag caaactTTaa 120
gcaatacatt aggcattggg aagaatatga attgcaatTT atatttcaat tgtgtaaaaat 180
cactTTaact actgaaatta tggcttacct gcacaccatg gattctacaa ttttagaaca 240
gtggaatTTt ggattaacct tgccccctc agctagTTt gaggatgcct atcgattTgt 300
aaaaaatgca gcaacatcct gtcacaagga cagtcctcca caggctaaac aagaccTTt 360
ggcaaaatat aaatTTtga atgtagacct taaggaacgc ttttctTTg atttg 415

<210> 467

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype MM7 (21-432/412 bp)

<400> 467

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catttggttg tttaatgagt tatttggttac agttgtagat actaccgca gtaccaatat 60
tactatttca gctgctgcta cacaggctaa tgaatacaca gcctctaact ttaaggaata 120
cctccgccac accgaggaat atgacttaca gggttatattg caactttgca aaatacatct 180
taccctgaa attatggcat acctacatag tatgaatgaa catttattgg atgagtggaa 240
ttttggcgtg ttaccacctc cttccaccag ccttgatgat acctatcgct atctgcagtc 300
ccgtgctatt acctgccaaa agggtccttc cgccctgcc cctaaaaagg atccttatga 360
tggccttgta ttttgggagg ttgatttaaa ggacaaacta tccacagatt tg 412
```

<210> 468

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype MM8 (21-432/412 bp)

<400> 468

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tatatgctgg tttaatcaat tgtttgtcac ggtggtggat accaccgca gcaccaattt 60
tactattagt gctgctacca acaccgaatc agaataaaa cctaccaatt ttaaggaata 120
cctaagacat gtggaggaat atgatttgca gtttatattc cagttgtgta aggtccgtct 180
gactccagag gtcattgcct atttacatac tatgaatgac tccttattag atgagtggaa 240
ttttggtggt gtgccccctc cctccacaag tttagatgat acctataggt acttgcagtc 300
tcgcgccatt acttgccaaa agggggccgc cgccgccaag cctaaggaag atccttatgc 360
tggcatgtcc ttttgggatg tagatttaaa ggacaagttt tctactgatt tg 412
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<210> 469

<211> 15

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 469

ttttttttttt ttttt 15

<210> 470

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 470

gcccagactg tgggtggcag 20

<210> 471

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 471

ccaccaactg ctttagcaccc c 21

<210> 472

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 472

tgcagcgtac tccccacatc a 21